

**IN THE CLAIMS:**

Claim 1. (Currently Amended): A configurable controller comprising:

a synchronization control module;

a plurality of configurable signal acquisition modules connected with ~~said~~ the synchronization control module;

a control logic connected with ~~said~~ the plurality of configurable signal acquisition modules;

a plurality of identical input cells respectively connected with ~~said~~ the plurality of configurable signal acquisition modules, each of ~~said~~ the plurality of identical input cells ~~additionally further being~~ connected with a respective input pin of ~~said~~ the configurable controller; and

a synchronizing signal generator connected with ~~said~~ the synchronization control module and with ~~said~~ the plurality of identical input cells,

wherein each one of ~~said~~ the plurality of identical input cells is ~~operable to convert~~ capable of converting input signal parameters to time-based parameters; and

wherein each of ~~said~~ the configurable signal acquisition modules is configured to convert ~~said~~ the time-based parameters to a required digital form.

Claim 2. (Currently Amended): The configurable controller of claim 1,

wherein each of ~~said~~ the plurality of identical input cells comprises a comparator,

~~said~~ the comparator adapted to receive an input signal from the respective input pin of the configurable controller, and

a synchronization signal from ~~said~~ the synchronizing signal generator, and to output a signal.

Claim 3. (Currently Amended): The configurable controller of claim 2, wherein ~~said~~ the synchronization signal ~~has~~ comprises a saw-teeth shape.

Claim 4. (Currently Amended): The configurable controller of claim 1, ~~wherein said~~  
~~configurable controller additionally comprises~~ further comprising:

a plurality of configurable output control logic modules connected with ~~said~~ the control logic, and ~~said controller additionally comprising~~

a plurality of high-side output drivers and low-side output drivers connected with ~~said~~ the configurable output control logic modules,

~~said~~ the plurality of high-side output drivers and low-side output drivers additionally  
further being connected with a plurality of output pins of ~~said~~ the configurable controller.

Claim 5. (Currently Amended): The configurable controller of claim 4, wherein

at least one of ~~said~~ the plurality of configurable output control logic modules is  
connected to one pair of high-side output driver and low-side output driver from the plurality of  
high-side output drivers and low-side output drivers, driver,

~~said~~ the one pair of high-side output driver and low-side output driver being drivers  
connected through respective output pins of ~~said~~ the configurable controller to one side of a  
load, wherein

~~said~~ the plurality of configurable output control logic module is configured to drive only one of ~~said~~ the high-side output driver and low-side output driver from the one pair of high-side output driver and low-side output driver, depending on ~~said load's other~~ a second side connection of the load.

Claim 6. (Currently Amended): The configurable controller of claim 4, wherein

at least one of ~~said~~ the plurality of configurable output control logic modules is connected to one of ~~said~~ the low-side drivers or to one of said the high-side drivers from the plurality of high-side output drivers and low-side output drivers,

~~said~~ the one of the low-side drivers or the one of the high-side drivers driver being connected through a respective output pin of ~~said~~ the configurable controller to a load, wherein ~~said~~ the plurality of configurable output control logic module is configured to drive ~~said~~ the one of the low-side drivers or the one of the high-side drivers driver.

Claim 7. (Currently Amended): The configurable controller of claim 4,

wherein a first configurable output control logic module and a second configurable output control logic module ~~ones of said configurable output control logic modules~~ are connected respectively to one pair of high-side driver and low-side driver from the plurality of high-side output drivers and low-side output drivers,

~~said~~ the one pair of high-side driver and said low-side driver being connected to two sides of a load through two respective output pins of ~~said~~ the configurable controller ~~to two sides of a load~~,

wherein ~~said~~ the first configurable output control logic module and the second configurable output control logic module ~~modules~~ are configured to control ~~said~~ the one pair of high-side driver and low-side driver by two independent signal sources.

Claim 8. (Currently Amended): The configurable controller of claim 4,

wherein at least one of ~~said~~ the plurality configurable output control logic modules is connected to two ~~of said~~ high-side drivers from the plurality of high-side output drivers and low-side output drivers,

~~said~~ the two high-side drivers being connected to one side of a load through respective output pins of ~~said~~ the configurable controller ~~to one side of a load~~,

wherein ~~said~~ the plurality of configurable output control logic modules ~~modules~~ is configured to simultaneously control ~~said~~ the two high-side drivers.

Claim 9. (Currently Amended): The configurable controller of claim 4, wherein at least one of ~~said~~ high-side drivers or low-side drivers from the plurality of high-side output drivers and low-side output drivers is connected to one of ~~said~~ the input cells.

Claim 10. (Currently Amended): The configurable controller of claim 9, wherein ~~said~~ the input cell is ~~operable to measure~~ capable of measuring the current of ~~said~~ the at least one of high-side drivers or low-side ~~driver~~ drivers from the plurality of high-side output drivers and low-side output drivers.

Claim 11. (Currently Amended): The configurable controller of claim 10, wherein ~~said the~~ the input cell is ~~operable to detect~~ capable of detecting connectivity of ~~said the~~ the at least one of high-side drivers or low-side ~~driver~~ drivers from the plurality of high-side output drivers and low-side output drivers.

Claim 12. (Currently Amended): The configurable controller of claim 10, wherein ~~said the~~ the input cell is ~~operable to confirm~~ capable of confirming switching of ~~said the~~ the at least one of high-side drivers or low-side ~~driver~~ drivers from the plurality of high-side output drivers and low-side output drivers.

Claim 13. (Currently Amended): A method of acquiring a plurality of signals, comprising the steps of:

- (a) providing a synchronization control module;
- (b) configuring a plurality of configurable signal acquisition modules connected with ~~said the~~ the synchronization control module;
- (c) providing a control logic connected with ~~said the~~ the plurality of configurable signal acquisition modules;
- (d) providing a plurality of identical input cells respectively connected with ~~said the~~ the plurality of configurable signal acquisition modules;
- (e) providing a synchronizing signal generator connected with ~~said the~~ the synchronization control module and with ~~said the~~ the plurality of identical input cells,
- (f) acquiring a plurality of input signals, each ~~said the~~ the plurality of input signals being acquired by one of ~~said the~~ the plurality of identical input cells;

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(g) converting ~~said acquired signal parameters~~ the plurality of input signals into a plurality of time-based parameters; and

(h) converting ~~said~~ the plurality of time-based parameters into required digital forms.

Claim 14. (Currently Amended): The method of claim 13, wherein ~~said~~ step (g) ~~of converting said acquired signal parameters into a plurality of time based parameters~~ comprises the steps of:

(g1) receiving a synchronization signal from ~~said~~ the synchronizing signal generator; and

(g2) comparing ~~said acquired~~ the plurality of input signal with ~~said~~ the synchronization signal.

Claim 15. (Currently Amended): The method of claim 14, wherein ~~said~~ the synchronization signal ~~has~~ comprises a saw-teeth shape.

Claim 16. (Canceled).

Claim 17. (Currently Amended): A ~~The~~ configurable controller ~~of claim 16~~ comprising:

a control logic;

a plurality of configurable output control logic modules connected with the control logic;

and

a plurality of high-side output drivers and low-side output drivers connected with the plurality of configurable output control logic modules, the plurality of high-side output drivers and low-side output drivers further being connected with a plurality of output pins of the configurable controller,

wherein at least one of ~~said~~ the plurality of configurable output control logic modules is connected to one pair of high-side output driver and low-side output driver,

~~said the one pair of high-side output driver and low-side output driver being drivers~~  
connected to one side of a load through respective output pins of ~~said~~ the configurable controller ~~to one side of a load~~, wherein

~~said the plurality of~~ configurable output control logic module is configured to drive only one of ~~said the one pair of~~ high-side output driver and low-side output driver, depending on ~~said~~ load's other a second side connection of the load.

Claim 18 (Canceled).

Claim 19 (Currently Amended): A ~~The~~ configurable controller ~~of claim 16~~ comprising:

a control logic;

a plurality of configurable output control logic modules connected with the control logic;

and

a plurality of high-side output drivers and low-side output drivers connected with the plurality of configurable output control logic modules, the plurality of high-side output drivers and low-side output drivers further being connected with a plurality of output pins of the configurable controller,

wherein a first configurable output control logic module and a second configurable output control logic module ~~ones of said configurable output control logic modules~~ are connected respectively to one pair of high-side output driver and low-side output driver,

~~said~~ the one pair of high-side output driver and said low-side output driver being  
connected to two sides of a load through two respective output pins of ~~said~~ the configurable  
controller ~~to two sides of a load~~,

wherein ~~said~~ the first configurable output control logic module and the second  
configurable output control logic module ~~modules~~ are configured to control ~~said~~ the one pair of  
high-side output driver and low-side output driver by two independent signal sources.

Claim 20 (Currently Amended): A ~~The~~ configurable controller ~~of claim 16~~ comprising:

a control logic;

a plurality of configurable output control logic modules connected with the control logic;

and

a plurality of high-side output drivers and low-side output drivers connected with the  
plurality of configurable output control logic modules, the plurality of high-side output drivers  
and low-side output drivers further being connected with a plurality of output pins of the  
configurable controller.

wherein at least one of ~~said~~ the plurality of configurable output control logic modules is  
connected to two ~~of~~ high-side output drivers,

~~said~~ the two high-side output drivers being connected to one side of a load through  
respective output pins of ~~said~~ the configurable controller ~~to one side of a load~~,

wherein ~~said~~ the plurality of configurable output control logic module is configured to  
simultaneously control ~~said~~ the two high-side output drivers.

Claim 21. (Canceled):



Claim 22 (Currently Amended): A The method of ~~claim 21~~ controlling a plurality of loads,  
comprising the steps of:

(a) providing a control logic;

(b) providing a plurality of configurable output control logic modules connected with the  
control logic;

(c) providing a plurality of high-side output drivers and low-side output drivers  
connected with the plurality of configurable output control logic modules, the plurality of high-  
side output drivers and low-side output drivers further being connected with a plurality of output  
pins of the configurable controller; and

(d) configuring each of the plurality of configurable output control logic modules to  
drive at least one of the plurality of high-side output drivers and low-side output drivers  
according to the connections between the plurality of loads and the plurality of high-side output  
drivers and low-side output drivers,

wherein at least one of ~~said~~ the plurality of configurable output control logic modules is  
connected to one pair of high-side output driver and low-side output driver,

~~said~~ the one pair of high-side output driver and low-side output driver being drivers  
connected to one side of a load through respective output pins of ~~said~~ the configurable controller  
~~to one side of a load,~~ wherein

~~said~~ the plurality of configurable output control logic module is configured to drive only  
one of ~~said~~ the high-side output driver and low-side output driver, depending on ~~said load's~~  
~~other a second~~ a second side connection of the load.

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Claim 23 (Canceled).

Claim 24 (Currently Amended): A The method of ~~claim 21~~ controlling a plurality of loads,  
comprising the steps of:

(a) providing a control logic;

(b) providing a plurality of configurable output control logic modules connected with the  
control logic;

(c) providing a plurality of high-side output drivers and low-side output drivers  
connected with the plurality of configurable output control logic modules, the plurality of high-  
side output drivers and low-side output drivers further being connected with a plurality of output  
pins of the configurable controller; and

(d) configuring each of the plurality of configurable output control logic modules to  
drive at least one of the plurality of high-side output drivers and low-side output drivers  
according to the connections between the plurality of loads and the plurality of high-side output  
drivers and low-side output drivers,

wherein a first configurable output control logic module and a second configurable  
output control logic module ~~ones of said configurable output control logic modules~~ are  
connected respectively to one pair of high-side output driver and low-side output driver,

~~said the one pair of~~ high-side output driver and ~~said~~ low-side output driver being  
connected to two sides of a load through two respective output pins of ~~said the configurable~~  
controller ~~to two sides of a load,~~

wherein ~~said~~ the first configurable output control logic module and the second configurable output control logic module ~~modules~~ are configured to control ~~said~~ the one pair of high-side output driver and low-side output driver by two independent signal sources.

Claim 25 (Currently Amended): A The method of claim 21 controlling a plurality of loads, comprising the steps of:

- (a) providing a control logic;
- (b) providing a plurality of configurable output control logic modules connected with the control logic;
- (c) providing a plurality of high-side output drivers and low-side output drivers connected with the plurality of configurable output control logic modules, the plurality of high-side output drivers and low-side output drivers further being connected with a plurality of output pins of the configurable controller; and
- (d) configuring each of the plurality of configurable output control logic modules to drive at least one of the plurality of high-side output drivers and low-side output drivers according to the connections between the plurality of loads and the plurality of high-side output drivers and low-side output drivers,

wherein at least one of ~~said~~ the plurality of configurable output control logic modules is connected to two ~~of said~~ high-side output drivers,

~~said~~ the two high-side output drivers being connected to one side of a load through respective output pins of ~~said~~ the configurable controller ~~to one side of a load,~~

wherein ~~said~~ the plurality of configurable output control logic module is configured to simultaneously control ~~said~~ the two high-side output drivers.

Claim 26. (New): A configurable controller for controlling a plurality of loads, comprising:

a control logic;

a plurality of configurable output control logic modules connected with the control logic;

and

a plurality of high-side output drivers and low-side output drivers connected with the plurality of configurable output control logic modules, the plurality of high-side and low-side output drivers further being connected with a plurality of output pins of the configurable controller,

wherein each of the plurality of loads is connected to at least two of the output pins of the configurable controller and each of the output pins of the configurable controller is connected to a high-side output driver or a low-side output driver; and

the plurality of configurable output control modules are adapted to control each of the plurality of loads according to

a number of the output pins of the configurable controller connected to each of the plurality of loads,

a number of the high-side output drivers connected to the output pins of the configurable controller, and

a number of the low-side output drivers connected to the output pins of the configurable controller.

Claim 27. (New): The configurable controller of claim 26,

wherein at least one of the plurality of configurable output control logic modules is connected to one pair of high-side output driver and low-side output driver,

the one pair of high-side output driver and low-side output driver being connected to one side of a load through respective output pins of the configurable controller, wherein

the plurality of configurable output control logic module is configured to drive only one of the one pair of high-side output driver and low-side output driver, depending on a second side connection of the load.

Claim 28. (New): The configurable controller of claim 26,

wherein a first configurable output control logic module and a second configurable output control logic module are connected respectively to one pair of high-side output driver and low-side output driver,

the one pair of high-side output driver and low-side output driver being connected to two sides of a load through two respective output pins of the configurable controller,

wherein the first configurable output control logic module and the second configurable output control logic module are configured to control the one pair of high-side output driver and low-side output driver by two independent signal sources.

Claim 29. (New): The configurable controller of claim 26,

wherein at least one of the plurality of configurable output control logic modules is connected to two high-side output drivers,

the two high-side output drivers being connected to one side of a load through respective output pins of the configurable controller,

wherein the plurality of configurable output control logic module is configured to simultaneously control the two high-side output drivers.

Claim 30. (New): A method of controlling a plurality of loads, comprising the steps of:

- (a) providing a control logic;
- (b) providing a plurality of configurable output control logic modules connected with the control logic; and
- (c) providing a plurality of high-side output drivers and low-side output drivers connected with the plurality of configurable output control logic modules, the plurality of high-side output drivers and low-side output drivers further being connected with a plurality of output pins of the configurable controller,

wherein each of the plurality of loads is connected to at least two of the output pins of the configurable controller and each of the output pins of the configurable controller is connected to a high-side output driver or a low-side output driver; and

the plurality of configurable output control modules are adapted to control each of the plurality of loads according to

a number of the output pins of the configurable controller connected to each of the plurality of loads,

a number of the high-side output drivers connected to the output pins of the configurable controller, and

a number of the low-side output drivers connected to the output pins of the configurable controller.

Claim 31. (New): The method of claim 30,

wherein at least one of the plurality of configurable output control logic modules is connected to one pair of high-side output driver and low-side output driver,

the one pair of high-side output driver and low-side output driver being connected to one side of a load through respective output pins of the configurable controller, wherein

the plurality of configurable output control logic module is configured to drive only one of the one pair of high-side output driver and low-side output driver, depending on a second side connection of the load.

Claim 32. (New): The method of claim 30,

wherein a first configurable output control logic module and a second configurable output control logic module are connected respectively to one pair of high-side output driver and low-side output driver,

the one pair of high-side output driver and low-side output driver being connected to two sides of a load through two respective output pins of the configurable controller,

wherein the first configurable output control logic module and the second configurable output control logic module are configured to control the one pair of high-side output driver and low-side output driver by two independent signal sources.

Claim 33. (New): The method of claim 30,

wherein at least one of the plurality of configurable output control logic modules is connected to two high-side output drivers,

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the two high-side output drivers being connected to one side of a load through respective output pins of the configurable controller,

wherein the plurality of configurable output control logic module is configured to simultaneously control the two high-side output drivers.